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ORIGINAL

TRANSCULTURAL STUDY OF PERCEIVED COMPETENCE IN PHYSICAL EDUCATION AND LEISURE TIME

ESTUDIO TRANSCULTURAL DE LA PERCEPCIÓN DE COMPETENCIA ESCOLAR Y TIEMPO DE OCIO

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Este estudio forma parte de un Proyecto longitudinal para medir la influencia de variables de la Educación Física y la actividad física en el tiempo de ocio en los hábitos de práctica a lo largo del tiempo.

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ABSTRACT

The objective was to analyze the influence of perceived competence on gender, the pattern of physical-sport activity and the stages of change in the practice of physical activity in leisure. The sample was of 2168 students of the first course of Compulsory Secondary Education, of Costa Rica (423), Mexico (408) and Spain (1337). Chi-square (x2), t-student, ANOVA and univariate linear model analyzes were performed. The students with the highest index of practice and in active stages presented a greater perceived competence, also being superior in the boys than in the girls. From the results of this research, it is very probably that most schoolchildren will not become physically active. Therefore, in the three countries there is a low level of physical-sport activity that could be improved through methodological designs in Physical Education aimed at improving perceived competence.

KEY WORDS: perceived competence, finish index, physical education, health.

RESUMEN

El objetivo fue analizar la influencia de la competencia percibida en el Gender, el patrón de actividad físico-deportiva y las Stages of change en la práctica de actividad físico-deportiva de tiempo libre. La muestra fue de 2168 estudiantes del primer curso de Enseñanza Secundaria Obligatoria, de Costa Rica (423), Mexico (408) y Spain (1337). Se realizaron análisis de Chi-cuadrado (x^2), *t*-student, ANOVA y modelo lineal univariante. Los alumnos con mayor índice de práctica y en Active stages presentaron una mayor competencia percibida, siendo superior también en los Boys que en las Girls. Por los resultados de esta investigación, hay pocas posibilidades de que la mayoría de los escolares lleguen a ser físicamente activos. Por tanto, en los tres países existe un nivel bajo de actividad físico-deportiva que podría mejorar a través de diseños metodológicos en la Educación Física escolar orientados a la mejora de competencia.

PALABRAS CLAVE: actividad física, actitudes, salud, competencia motriz percibida.

INTRODUCTION

In Physical Education (PE), many variables are researched over decades that influence the behaviour of schoolchildren in their leisure time. They are common to most countries in the world (Gutiérrez, Pilsa, & Torres, 2007) where there is a constant in research. For this reason, Piéron and Ruiz-Juan (2010) affirm that it is necessary to design physical practices that students can develop in their leisure from EF classes. For example, the perception of competence is how a subject perceives whether it is good or bad to perform a physical-sport activity. If given well, it will positively influence physical activity in leisure time and vice versa, if not well, it influences the decision not to engage in physical activity (Piéron, 2007). Influence is very high and, in fact, perceived competence has been considered an important component of intrinsic motivation (Gutiérrez & Escartí, 2006; Spittle & Byrne, 2009). In fact, the effects on motivation are measured by perceived competition (Vallerand & Reid, 1984).

This concept is part of Deci & Ryan's theory in 1980 about cognitive evaluation (Decy & Ryan, 2008), Iturbide (University of the Basque Country, 2008) which described it as a theory of perceived competence based on other works (Harter, 1978; White, 1959), and was developed in sports context. If this concept is extrapolated to the educational context, it seems logical that the perceived competence influences the enjoyment and the scholar repeats the activity, therefore, his behaviour in leisure time may be more active (Duda & Nicholls, 1992).

As for gender, perceived competence has the same trend in both national (Moreno, Cervelló, Vera, & Ruiz, 2007, Moreno & Cerveló, 2005) and international studies (Gråstén, Jaakkola, Liukkonen, Watt, & Yli-Piipari, 2012), with girls having less perceived competition than boys.

At the school stage, motor skills are a criterion of natural selection, it generates acceptance by schoolmates. Children with less perceived competence are marginalized by other children in school (Report Skip, 2006), so that the perception of competence becomes important when establishing social relationships in physical activity, which can Influence their active behaviour. Getting a behavioural change depends a lot on the intent of the individuals. In this line, the transtheoric theory of behaviour change (TTM), initially developed by Prochaska and DiClemente in 1982, is used to better understanding and predicting health behaviours (Alvarez, 2008; Astudillo-García & Rojas-Russell, 2006; Cabrera, 2000). This model suggests that when people try to effect a change in behaviour, they go through several stages. These stages are changing over time. Although originally contemplated five stages, for the present investigation, the inactive and active stages are combined. Inactive stages are where the subjects are not intended to be physically active soon or even intend to, but have not started any activity. The active stages are those that have already started the activity for at least the previous six months.
In order to measure physical-sport activity in leisure, the Finnish index allows us to know the duration, frequency and intensity of physical activity practiced each week (Raitakari, Taimela, Telama, Rasanen, & Viikari, 1994). It has been used in studies similar to this (Telama, Leskinen, & Yang, 1996; Telama et al., 2005).

Therefore, the present study analyzes the influence of perceived competition on gender, the pattern of physical-sport activity and the stages of change in the practice of physical-leisure activity.

MATERIAL AND METHODS

Participants

Participants were 2168 students from the first compulsory secondary education course, selected to participate in a longitudinal study from Costa Rica (423), Mexico (408) and Spain (1337), with 1052 boys (50.4%), 1037 girls (49.6%), and 79 did not reflect gender, from public centers (86.6%) and concerted (13.4%). The age range was between 11 and 16 years old (M = 12.49; SD = .81), with the mean age in boys being 12.53 (SD = .87) and 12.44 (SD = .74) in girls.

Procedure

Schools were asked for permission by a letter explaining research objectives, and how it would be carried out, accompanying a model of the instrument. It was self-administered with massive application, completed anonymously in a school day, with consensus and previous training of evaluators. Participants were informed of the study's objective, voluntariness, absolute confidentiality responses and data handling, that there were no correct or incorrect answers, requesting them sincerity and honesty. Only students who had informed consent of parents and guardians participated in the investigation. He has a favorable report from the Bioethics Commission of the University of Murcia.

Instruments

- Physical-sport activity in leisure. To measure it, the same procedure was followed by Piéron, Ruiz-Juan, García and Díaz (2008) and Ruiz-Juan, García, García and Bush (2010). A question was used to determine if the respondents participated in free-time physical or sports activities, defining them as follows: "As physical-sport activities we mean all those performed with the intention of doing physical exercise and practiced with a certain regularity, including from the more regulated modalities, such as football, basketball, athletics, tennis, swimming ..., to other more open, such as mountaineering, cycling, climbing, scuba diving ... even those that each carries out according to their own tastes like running, swimming, cycling...". The student was asked to report whether: a) During the academic year, he did a physical-sport practice, b) During the academic year, he did not practice physical-sport activity, but he has practiced it previously c) I have never practiced physical-sport activity. Respondents who chose the last two options were classified as "inactive" (Finnish index of physical and sporting activity, Raitakari et al., 1994; Telama et al., 2005) and refers to frequency, duration, intensity, participation in organized sports and sports competitions. Responses were recoded into three categories so that all had a similar weight to calculate the index or pattern of physical activity. The resulting

value ranged from 5 to 15. The lowest scores are characteristic of less active people, while the highest scores is indicative of the most active individuals. According to previous researches with adolescents using this same measure (Piéron et al., 2008; Ruiz-Juan et al., 2010) and to better represent the patterns of physical activity, the score was used to classify the participants in vigorous, moderate, light and insufficient activity. For analytical purposes, a dichotomous variable is created by grouping the participants classified as vigorously active and moderately active (high level of physical-sport activity), on the one hand, and slightly active and insufficiently active (low level of physical-sport activity), on the other hand. The Cronbach's alpha demonstrates high reliability of the set of these variables (α = .88 Costa Rica, α = .83 Mexico, α = .87 Spain) similar to the one obtained in the cited works.

- *Stages of change* (Marcus, Rakowski & Rossi, 1992; Prochaska et al., 1992). It was defined as follows: "Physical activity or exercise includes activities such as walking briskly, running, cycling, swimming or any other activity in which exercise is at least as intense as these activities". Students were asked to mark "Yes" or "No" with respect to the following statements: (1) I am currently physically active, (2) I intend to be physically more active within the next 6 months. Those who marked "Yes" in question (1) did not answer question (2) and went on to answer questions (3) and (4). Previously it was defined as regular activity as follows: "For the activity to be regular, you must add a total of 30 minutes or more, at least 5 days a week. For example, you could do a 30-minute walk or do three 10-minute walks for a daily total of 30 minutes". Students were asked to tick "Yes" or "No" with respect to the following statements: (3) I currently engage in regular physical activity, (4) I have been engaging in regular physical activity for the past 6 months, as in previous studies (Bucksch, Finne, & Kolip, 2008; Cardinal et al., 2009; Ciccomascolo & Riebe, 2008). These five stages of change are pre-contemplation, contemplation, preparation, action and maintenance. For analytical purposes, a dichotomous variable is created by grouping students classified in the active stages (action and maintenance), on the one hand, and in the inactive stages (precommitment, contemplation and preparation), on the other hand.

- *Competence Perceptions Scale* of Calatarrá (2003), Spanish version of Los Peres de Compétence dans les Domaines de Vie (EPCDV) de Losier, Vallerand and Blais (1993). It is composed of 6 items that measure, by the subject itself, the perception of their own competence for the task. The subjects should indicate their degree of agreement with the items, collecting Likert scale responses ranging from 1 (totally disagree) to 7 (totally agree). The Cronbach's alpha shows acceptable reliability of the set of these variables (α = .83 Costa Rica, α = .78 Mexico, α = .78 Spain) being superior to that obtained in the cited work since the value of the internal consistency of The original scale was α = .68.

Data analysis

The internal consistency (Cronbach's alpha), Chi-square (x2), Student's t, ANOVA and univariate linear model were performed with SPSS 17.0.

RESULTS

Descriptive-inferential statistics by country

The results of the behaviors before the physical-sport practice of free time (Table 1) indicate clear significant differences (p <.001) among the three countries. Thus, the highest percentages of active students are in Costa Rica (88.5%) and Spain (73.3%), while in Mexico only 34.8% are active.

The pattern of physical-sport activity presents a very worrying scenario since only 11.9% of Mexican students have a high level of physical-sport activity compared to 32.7% of Spaniards and 23.8% of Costa Ricans. Therefore, what predominates is a low level of physical-sport activity in the three countries, the differences being statistically significant (p <.001) (Table 1).

In the stages of change, there are also statistically significant differences (p <.001) among the three countries. 71.9% of Costa Rican students are in the stages of active change for only 32.9% of Mexicans and 60.8% of Spaniards (Table 1).

Table 1. Chi square (x^2) by countries of the behaviors, pattern of physical-sport activity and stages of change.

	n	Costa Rica	Mexico	Spain	Total	x^2	*p*
Behaviors before the physical-sport practice in leisure							
Inactives	597	11.5	65.2	26.7	31.8	286.42	.000
Actives	1281	88.5	34.8	73.3	68.2		
Pattern of physical-sport activity in leisure							
Low level of physical activity	1373	76.2	88.1	67.3	73.4	66.40	.000
High level of physical activity	498	23.8	11.9	32.7	26.6		
Stages of change							
Inactives stages	777	28.1	67.1	39.2	43.3	128.46	.000
Actives stages	1019	71.9	32.9	60.8	56.7		

As shown in Table 2, there are statistically significant differences (p <.001) between the means of perceived competition by country. The students showed a high perception of their competence, being similar in Latin countries (Costa Rica: M = 4.80, Mexico: M = 4.88) and higher than in Spain (M = 4.23). The results of the test of homogeneous subsets of Bonferroni indicate that these two distinct subsets can be established, corresponding to the two Latin American countries and the other to the Spanish ones.

Table 2. ANOVA by countries of perceived competition.

	Costa Rica (*n*=381)			Mexico (*n*=389)			Spain (*n*=1096)			*F*	*Sig.*
	α	*M*	*DT*	*α*	*M*	*DT*	*α*	*M*	*DT*		
Perceived competence	.83	4.80	1.43	.78	4.88	1.26	.78	4.23	1.29	46.98	.000

Main relationships and interaction of sex, behaviors, pattern of physical-sport activity and stages of change in leisure time on the perception of competence in Physical Education

An analysis of the univariate linear model (Tables 3) was performed where the sex, behaviors, physical-sport activity pattern and the stages of change in free time were considered as independent variables, and as a dependent variable the perception of competence in EF. The calculated model showed significant main relationships between the dependent variables and the independent variable in Costa Rica and Spain, but not in Mexico. No second order interaction effects were found among the independent variables (p> .05) in any country (Table 3).

Table 3. Analysis of the univariate linear model of the perception of competence according to sex, behaviors, pattern of physical-sport activity and states of change

	Gender	*Behaviours*	*Physical activity pattern*	*Stages of change*	*Corrected model*
	F	*F*	*F*	*F*	*F*
Costa Rica	3.78*	4.12**	4.45**	.04	14.50***
Mexico	.49	1.49	.16	.27	4.25***
Spain	60.54***	4.00**	4.09**	1.92	21.25***

*(p<.05), **(p<.01), ***(p<.001)

Regarding sex, statistically significant differences were found in all countries (p <.001), with a greater perception of competition in boys than in girls. These differences in Costa Rica and Mexico were similar, whereas a greater difference was found in Spain between both sexes (Table 4).

The behaviors before the physical-sport practice in the free time, in the three countries, there are statistically significant differences. Assets always present average values higher than inactive ones (Table 4).

Analyzing the variables of the leisure time physical-sport activity pattern, in the three countries, there are statistically significant differences. Those who have a high level of physical-sport activity always have mean values higher than those with a low physical-sports activity (Table 4).

In the stages of change, we also found statistically significant differences in the

three countries, which indicate that the students of the active stages presented mean values higher than those of the inactive stages (Table 4).

Table 4. Mean (M), typical deviations (DT), significance (F, p value) and error size (d) of perceived competence, differences by gender, behaviors before physical-sport practice, physical-activity pattern and states of change.

		M	*DT*	*t*	*p*	*d*
Gender						
Costa Rica	*Boys (n=177)*	5.15	1.34	4.94	.000	.59
	Girls (n=177)	4.42	1.43			
Mexico	*Boys (n=204)*	5.20	1.15	5.42	.000	.35
	Girls (n=185)	4.53	1.28			
Spain	*Boys (n=525)*	4.71	1.19	12.63	.000	.52
	Girls (n=518)	3.78	1.22			
Behaviors before the physical-sport practice in leisure						
Costa Rica	*Inactives (n=36)*	4.10	1.53	-3.12	.002	-.25
	Actives (n=274)	4.88	1.39			
Mexico	*Inactives (n=252)*	4.82	1.25	-2.03	.037	-.18
	Actives (n=124)	5.07	1.25			
Spain	*Inactives (n=242)*	3.72	1.25	-7.30	.000	-.32
	Actives (n=664)	4.42	1.27			
Pattern of physical-sport activity in leisure						
Costa Rica	*Low level of physical activity(n=229)*	4.58	1.44	-5.21	.000	-.48
	High level of physical activity(n=77)	5.51	1.04			
Mexico	*Low level of physical activity(n=335)*	4.86	1.26	-1.96	.048	-.29
	High level of physical activity(n=41)	5.21	1.18			
Spain	*Low level of physical activity(n=611)*	4.04	1.29	-6.24	.000	-.26
	High level of physical activity(n=308)	4.61	1.25			
Stages of change						
Costa Rica	*Inactive stages (n=74)*	4,50	1,64	-1.99	.047	-.27
	Active stages (n=200)	4,89	1,33			
Mexico	*Inactive stages (258)*	4,81	1,26	-1.98	.048	-.12
	Active stages (n=116)	5,09	1,22			
Spain	*Inactive stages (n=344)*	3,84	1,28	-7.06	.000	-.30
	Active stages (n=551)	4,47	1,26			

DISCUSSION

The objective of the present investigation was to discover the influence of the perceived competence in gender, practice behaviour, index of physical activity and the stages of change in the physical activity in leisure. In general, it was found that schoolchildren at the beginning of Secondary Education have a high perceived competence in the three countries. At first, greater perceived competition is related to more active behaviours in leisure (López-López et al., 2015). But if this data is related to the involution of the practice of physical activity along time (Reverter, Plaza, Jové, & Hernández, 2014), the effectiveness of PE is questioned, since perceived competence is one of the main predictors of intentionality of being physically active (Moreno, Moreno, & Cervelló, 2007). The student's motivation in PE favors learning (Pérez, 2016).

According to perceived competence related to gender, the results corroborate the literature trend so far (Moreno, Cervelló, Vera, & Ruiz, 2007; Moreno & Cerveló, 2005), with a greater perceived competence among boys than girls, as many other studies (Hortigüela, Pérez, & Calderon, 2016, Torralba, Vieira, Lleixà, & Gorla, 2016, Urritia, Irazusta, Balerdi, González, & Arruza, 2013). This difference was even greater in Spanish students. Taking this data into account, PE objectives that affect the perceived competence should be considered. According to Vera, Hernández, González-Cutre, Navarro and Moreno (2008), the adequacy of physical activity to gender in PE is very important.

The highest percentages of active students are in Costa Rica and Spain, while only a third of Mexican students are active. Mexico is the most inactive country, followed by Spain and, lastly, Costa Rica. This data coincides with other studies on the problem of sedentarism in Mexico (Cornejo-Barrera, Llanas-Rodríguez, & Alcázar-Castañeda, 2008). Actives always present greater perceived competence than inactive ones (with statistically significant differences in the three countries). PE can lead active youngsters to remain physically active adults (Piéron & Ruiz-Juan, 2010); in fact, physical activity in leisure of schoolchildren is the most determinant of the adoption of active lifestyles (Calvo & Pastoriza, 2006). However, because of the results of this research, there is very little chance that most schoolchildren will become physically active, especially in Mexico. Burkhalter and Wendt (2001) stated that feeling incompetence in PE classes causes schoolchildren not to identify with physical activity, so they will not practice it in leisure.

In addition to being active or not, the quantity, frequency and intensity of practice are essential to maintain and improve health. Therefore, the data of the physical activity index present a rather worrying scenario, since only 11.9% of Mexican students have a high level of physical-sport activity compared to 32.7% of Spaniards and 23.8% of Costa Ricans. Thus, in all three countries there is a low level of physical activity. This data coincides with other studies (Escalante-Izeta, Haua-Navarro, Moreno-Landa, & Pérez-Lizaur, 2016, Palou, Vidal, Ponseti, Cantallops, & Borràs, 2012), Reyes-Sepeda, García-Jiménez, Gutiérrez-Sereno, Galeana-Hernández & Gutiérrez-Saucedo, 2016) where sedentarism is increasingly evident at these ages. It is important to know the physical activity index because those who practice moderate and vigorous

physical activity, in addition to greater perceived competence, present more favorable attitudes for the practice of physical activity (López-López et al., 2015).

Those with a high index of physical activity always present greater perceived competence than those with a low index of physical activity (with statistically significant differences in the three countries). It coincides with Burkhalter and Wendt (2001) when they affirm that the students with better physical condition (as could have those of higher index) have a greater perceived competence. Therefore, perceived competence is not only of interest in order to increase the practice, but also to make it more intense and, consequently, to bring greater health benefits (Haskell et al., 2007; Ruiz-Ruiseño, 2010; Trost, Owen, Sallis, & Brown, 2002).

The problem not only about what Mexicans do, also what they intend to do. In Costa Rica and Spain, students seem to be aware of the importance of practicing physical activity and their intention to practice is observed through the stages of change, where 71.9% of Costa Rican students and 60.8% of Spaniards are in the active stages of change. However, the serious problem of child sedentarism in Mexico is aggravated when only 32.9% of Mexicans had a close (or had recently started) intention to be active, since Piéron and Ruiz Juan (2010) stated that it is very difficult the change for those subjects in inactive stages. In addition, authors such as Fernández, González, Toja and Carreiro (2017) affirm that the positive attitude towards the practice, in PE classes, is the one that determines that the students come to adopt an active lifestyle.
The students in active stages also present greater perceived competence than the students in inactive stages (with statistically significant differences in the three countries). This could be explained by the feeling of competence, that makes the practitioner enjoy and stay in the activity, so that subjects in active stages can maintain the practice (University of the Basque Country, 2008). It should also be taken into account that perceived incompetence reduces the intrinsic motivation towards practice (Standage, Duda, & Ntoumanis, 2003), so that those who are in inactive stages and have less perceived competence will be the students who find it most difficult to vary their stage of change. In addition, Burkhalter and Wendt (2001) stated that schoolchildren who had less perceived competence are more likely to drop out of physical activity.
Compared with the sports context, perceived competence improves experiences, and this motivates them (Zamarripa, De la Cruz, Álvarez, & Castillo, 2016), so that greater perceived competence in PE will provide good experiences to advantage the practice of physical activity in leisure.
Piéron and Ruiz Juan (2010) concluded in their study that as people progress in age, they have more intentions to practice, but there are less in active stages. Therefore, policies to promote physical activity should not only be aimed at raising awareness of the benefits of regular physical activity, but also the implementation. In this line, the results indicate that physical activities should be promoted where the different groups of schoolchildren (boys, girls or degree of competence depending on the type of activity) have a greater perceived competence during the activities.

CONCLUSIONS

Schoolchildren from Costa Rica and Spain are more active than in Mexico, where only one-third of the students practice physical activity, so the problem of child sedentariness persists in this country.

Most of the active schoolchildren in all countries had a low index, so despite some of them practicing physical and sports activity, this is not enough for their health, since they do not reach the recommendations of intensity, quantity or frequency of practice of physical activity.

The students with the highest index of practice and who are in stages of active change present a greater perceived competence, being superior also in boys than in girls.

The results of this research confirms that there is little chance that the majority of schoolchildren will become physically active in all three countries. Therefore, school PE should be aimed at improving competence, in order to increase the practice of physical activity, the index of practice and to move from inactive to more active stages.

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